

CLAIMS

1. A method of performing an electrochemical reaction in an electrochemical cell comprising electrodes separated by a hydrophilic ion-exchange membrane, wherein the reaction is conducted in the presence of an aqueous solution of an electrolyte of which the concentration is controlled.
2. A method according to claim 1, wherein the degree of hydration of the membrane is controlled.
3. A method according to claim 2, wherein the degree of hydration is controlled by removing water from the membrane.
4. A method according to claim 3, wherein the degree of hydration is controlled by evaporating water from the membrane.
5. A method according to any of claims 2 to 4, wherein water is a reactant and the input of water into the cell is controlled.
6. A method according to any preceding claim, wherein the electrolyte is toluenesulphonic acid, vinylsulphonic acid, acrylamido-(2-methyl)propanesulphonic acid, sodium hydroxide or potassium hydroxide.
7. A method according to any preceding claim, wherein the hydrophilic material is ionically inactive.
8. A method according to any of claims 1 to 6, wherein the hydrophilic material is ionically active.
9. A method according to any preceding claim, wherein the hydrophilic material is a polymeric material.
10. A method according to claim 9, wherein the hydrophilic material is obtainable by the polymerisation of monomers including methyl methacrylate, N-vinyl-2-pyrrolidone or acrylonitrile.
11. A method according to claim 9 or claim 10, wherein the hydrophilic material is cross-linked.
12. A method according to any preceding claim, wherein the cell is a fuel cell or an electrolyser.
13. A method according to any preceding claim, wherein the cell is in the form of a membrane-electrode assembly (MEA), or a stack of MEAs.

14. A method according to any preceding claim, wherein the concentration is controlled by the addition of further electrolyte.